

REMARKS

Claims 15 to 28 are currently pending.

Reconsideration of the application is respectfully requested based on the following remarks.

With respect to paragraph 3 of the Office Action, claims 15 to 28 were rejected under 35 U.S.C. § 102(e) as anticipated by Wilstermann et al., U.S. Patent No. 6,145,491 (the “Wilstermann” reference).

Applicants respectfully note that the Office Action erroneously listed the “Wilstermann” reference as being U.S. Patent No. 6,012,425. However, U.S. Patent No. 6,012,425 is instead to Unland et al. The Applicants have inferred from the rejection’s citing of Figures 1A-3C that the Office Action instead meant to refer to U.S. Patent No. 6,145,491 because U.S. Patent No. 6,012,425 does not include Figures 1A-3C. Therefore, for the purposes of this Response, the rejection is taken to be over U.S. Patent No. 6,145,491 (the “Wilstermann” reference).

As regards the anticipation rejections of the claims, to reject a claim under 35 U.S.C. § 102(e), the Office must demonstrate that each and every claim feature is identically described or contained in a single prior art reference. (*See Scripps Clinic & Research Foundation v. Genentech, Inc.*, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991)). As explained herein, it is respectfully submitted that the Office Action does not meet this standard, for example, as to all of the features of the claims. Still further, not only must each of the claim features be identically described, an anticipatory reference must also enable a person having ordinary skill in the art to practice the claimed invention, namely the claimed subject matter of the claims, as discussed herein. (*See Akzo, N.V. v. U.S.I.T.C.*, 1 U.S.P.Q.2d 1241, 1245 (Fed. Cir. 1986)).

As further regards the anticipation rejections, to the extent that the Office Action may be relying on the inherency doctrine, it is respectfully submitted that to rely on inherency, the Examiner must provide a “basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristics *necessarily* flows from the teachings of the applied art.” (*See* M.P.E.P. § 2112; emphasis in original; and *see Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Int’f. 1990)). Thus, the M.P.E.P. and the case law make clear that simply because a certain result or characteristic may occur in the prior art does not establish the inherency of that result or characteristic. Accordingly, it is respectfully

submitted that any anticipation rejection premised on the inherency doctrine is not sustainable absent the foregoing conditions.

Claims 15 and 22 are to a method and device, respectively, for “*detecting knocking.*” Claim 15 includes the features of “*subdividing the measuring signal into a plurality of time windows,*” and “*examining each window to determine whether the combustion occurred with knocking.*” Claim 15 also includes the features of “*comparing results of the plurality of windows to each other for a final assessment of whether the combustion occurred with knocking.*” Claim 22 includes features like those of claim 15.

The “Wilstermann” reference does not identically disclose (or even suggest) at least the above-identified claim features. Specifically, the “Wilstermann” reference does not disclose (or even suggest) at least the claim feature of “*comparing results of the plurality of windows to each other for a final assessment of whether the combustion occurred with knocking.*”

Instead, the “Wilstermann” reference states that an “*ionic current is sensed or detected in the combustion chamber to provide a corresponding ionic current signal*” (col. 3, lines 20 to 22) and that a “*filtered and sampled [ionic current] signal is then integrated to provide a present integral value, which is compared to a lower or minimum knocking threshold and to a higher or maximum knocking threshold*” (col. 3, lines 27 to 30) to determine a knocking condition. The “Wilstermann” reference states that one of three cases can result of the determination. In “*a first case, if the present integral value does not exceed the lower knocking threshold, then a non-knocking signal is provided;*” (col. 3, lines 32 to 34) in “*a second case, if the present integral value exceeds the lower knocking threshold and does not exceed the higher knocking threshold, then a knock recognition signal is provided;*” (col. 3, lines 36 to 39) and in “*a third case, if the present integral value exceeds the higher knocking threshold, then either the non-knocking signal is provided, or the same non-knocking or knock recognition signal that was provided in the preceding cycle is maintained*” (col. 3, lines 51 to 55). Thus, the “Wilstermann” reference refers to determining a knocking condition by comparing an integrated signal to a low and high threshold.

Furthermore, the “Wilstermann” reference also states that “*it is especially advantageous to adjust or update at least the higher knocking threshold dependent on at least one and preferably a plurality of prior integral values of the ionic current signal*” (col. 4, lines 57 to 61). Thus, the “Wilstermann” reference states that the high threshold is updated

according to previous values of the integrated ionic signal. The “Wilstermann” reference also states that *“maintaining the higher knocking threshold at the same value as in the last evaluation cycle, i.e. not updating the higher knocking threshold value, as long as a knocking combustion is being detected”* (col. 5, lines 4 to 7) is done. Thus, the “Wilstermann” reference does not update the high threshold in the case of a knocking condition already being detected.

However, none of this identically discloses (or even suggests) the feature of *“comparing results of the plurality of windows to each other for a final assessment of whether the combustion occurred with knocking.”* as provided for in the context of the claim. That is, the “Wilstermann” reference does not identically disclose (or even suggest) comparing the results of each of a plurality of time windows to each other to determine if a knocking condition is occurring. For example, the aspect of the “Wilsterman” reference which compares the present time window results to the high and low threshold to determine if a knocking condition is occurring clearly does not identically disclose (or even suggest) the feature of comparing of a plurality of time windows to each other.

Furthermore, the aspect of the “Wilstermann” reference which updates the high threshold based on previous values of the integrated ionic signal also does not identically disclose (or even suggest) the feature of *“comparing results of the plurality of windows to each other for a final assessment of whether the combustion occurred with knocking.”* as provided for in the context of the claim. Instead, the “Wilstermann” reference states that *“[t]he determination of the updated threshold values can be carried out by temporarily storing one or more prior integral values in a shift register or the like, and then reading out the desired plurality of prior integral values from the shift register positions, respectively multiplying each prior integral value by an associated weighting factor, and then arithmetically combining the resulting weighted prior integral values”* (col. 9, lines 9 to 16).

Thus, the “Wilstermann” reference indicates that the results from a plurality of windows may be multiplied by respective weighting factors, and arithmetically combined to determine a new threshold. However, neither multiplying previous integrated values by weighting factors, nor arithmetic combination of the weighted previous values identically discloses (or even suggests) comparing the results from a plurality of time windows to each other. That is, neither multiplying by weighting factors, nor arithmetic combination is the same as comparing values to each other.

Therefore, the above-discussed features of claims 15 and 22 are not identically disclosed (or even suggested) by the “Wilstermann” reference. Accordingly, claims 15 and 22 and their respective dependent claims are allowable. It is therefore respectfully requested the anticipation rejections of claims 15 to 28 be withdrawn.

As to claim 16, this claim is allowable for the further reason that the “Wilstermann” reference does not identically disclose (or even suggest) the feature in which the *“combustion is assessed as occurring with knocking if a knocking combustion is detected in a majority of the plurality of windows,”* as in claim 16. Nothing in the “Wilstermann” reference identically discloses (or even suggests) a evaluating whether the results of a majority of a plurality of windows indicates a knocking condition. Instead, as discussed above, the “Wilstermann” reference merely states that *“temporarily storing one or more prior integral values in a shift register . . . then reading out the desired plurality of prior integral values . . . multiplying each prior integral value by an associated weighting factor, and then arithmetically combining the resulting weighted prior integral values”* (col. 9, lines 10 to 16). However, nothing in this procedure identically discloses (or even suggests) the feature of evaluating whether the results of a majority of a plurality of windows indicates a knocking condition.

As to claim 17, this claim is allowable for the further reason that the “Wilstermann” reference does not identically disclose (or even suggest) the *“wherein the measuring signal is subdivided into at least three measuring windows, and the combustion is assessed as occurring with knocking if a knocking combustion is detected in at least two of the windows,”* as presented in claim 17. As explained above as to claim 16, the “Wilstermann” reference does not identically disclose (or even suggest) the feature of evaluating whether the results of a majority of a plurality of windows indicates a knocking condition. Therefore, the “Wilstermann” reference also does not identically disclose (or even suggest) the feature of evaluating whether the results of a 2 out of 3 windows indicates a knocking condition.

As to claim 19, this claim is allowable for the further reason that the “Wilstermann” reference does not identically disclose (or even suggest) the feature in which *“a length of the windows is changed as a function of a speed of the internal combustion engine,”* as in claim 19. In the rejection of claim 19, the Office Action asserts that the text at col. 4, lines 44-56 provides such a teaching. However, the cited portion of the “Wilstermann” reference only states that:

“Further according to the invention, it is very advantageous for the higher knocking threshold to be adjusted or updated cycle-by-cycle dependent on and

following a parameter that describes the presently existing operating condition of the engine. This is especially true since the ionic current signal may vary rather strongly dependent on the respective prevailing operating condition of the engine, for example particularly the rotational speed and the load applied to the engine. Thus, by continuously updating the higher knocking threshold dependent on the operating parameter such as the rotational speed or the load, it is possible to remove any influence that the particular operating condition might have on the present evaluation method."

(emphasis added)

Thus, the "Wilstermann" reference states that the high threshold is adjusted depending on the rotational speed of the engine. However, the high threshold is not the same as the length of the window, as in claim 19. That is, the window of claim 19 is a time window, and thus the length of the window is a time value, whereas the high threshold of the "Wilstermann" is not a time value, but rather an amplitude value against which an integrated signal is compared. Accordingly, claim 19 is allowable for this further reason.

Accordingly, claims 15 to 28 are allowable.

CONCLUSION

Applicants respectfully submit that all pending claims of the present application are allowable. It is therefore respectfully requested that the rejections be withdrawn. Prompt reconsideration and allowance of the present application are therefore respectfully requested.

Respectfully submitted,

Dated: 3/6/2007

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